

WHAT IS CLAIMED IS:

1. An inspection system comprising:
 - at least two base members, said base members spaced apart from each other;
 - a support arm mounted to each said base member;
 - a linear track extending between and supported by said support arms, said track comprising a first side and a second side;
 - a transport member coupled to said linear track, said transport member movable along said linear track;
 - a transducer support arm pivotably coupled to said transport member;
 - and
 - a transducer assembly coupled to said transducer support arm.
2. An inspection system in accordance with Claim 1 wherein said transport member comprises a spur gear and said linear track comprises a rack, said spur gear configured to operationally couple to said rack to move said transport member along said track.
3. An inspection system in accordance with Claim 2 wherein said transport member comprises a plurality of guide rollers positioned to engage said first and second sides of said track.
4. An inspection system in accordance with Claim 1 wherein said linear track comprises a plurality of track sections.
5. An inspection system in accordance with Claim 1 wherein said transducer assembly comprises:

an attachment member coupled at a first end to said transducer support arm;

a support wheel coupled to a second end of said attachment member;

a link arm coupled to said second end of said attachment member;

at least one transducer holder coupled to said link arm; and

at least one of an ultrasonic transducer and an eddy current transducer mounted in each said transducer holder.

6. An inspection system in accordance with Claim 5 wherein said transducer assembly comprises at least two transducer holders, said transducer holders arranged linearly end to end and pivotably attached to each other.

7. An inspection system in accordance with Claim 1 further comprising a first position encoder and a second position encoder, said first position encoder configured to determine a first axis positioning and said second position encoder configured to determine a radial or second axis positioning.

8. An inspection system for inspecting metal articles, the inspection system comprising:

a base member;

a support arm mounted to said base member;

a linear track mounted to said support arm, said track comprising a first side and a second side;

a transport member coupled to said linear track, said transport member movable along said linear track;

a transducer support arm pivotably coupled to said transport member;

a transducer assembly coupled to said transducer support arm.

9. An inspection system in accordance with Claim 8 comprising at least two base members.

10. An inspection system in accordance with Claim 9 comprising at least two support arms, each said support arm mounted on a corresponding base member.

11. An inspection system in accordance with Claim 8 wherein said transport member comprises a spur gear and said linear track comprises a rack, said spur gear configured to operationally couple to said rack to move said transport member along said track.

12. An inspection system in accordance with Claim 11 wherein said transport member comprises a plurality of guide rollers positioned to engage said first and second sides of said track.

13. An inspection system in accordance with Claim 8 wherein said linear track comprises a plurality of track sections.

14. An inspection system in accordance with Claim 8 wherein said transducer assembly comprises:

an attachment member coupled at a first end to said transducer support arm;

a support wheel coupled to a second end of said attachment member;

a link arm coupled to said second end of said attachment member;

at least one transducer holder coupled to said link arm; and

at least one of an ultrasonic transducer and an eddy current transducer mounted in each said transducer holder.

15. An inspection system in accordance with Claim 14 wherein said transducer assembly comprises at least two transducer holders, said transducer holders arranged linearly end to end and pivotably attached to each other.

16. An inspection system in accordance with Claim 8 further comprising a first position encoder and a second position encoder, said first position encoder configured to determine a first axis positioning and said second position encoder configured to determine a radial or second axis positioning.

17. A method of inspecting a metal article, said method comprising:

positioning an inspection apparatus adjacent the metal article; and

inspecting the metal article utilizing the ultrasonic inspection apparatus;

the inspection apparatus comprising:

at least two base members, the base members spaced apart from each other;

a support arm mounted to each base member;

a linear track extending between and supported by the support arms, the track comprising a first side and a second side;

a transport member coupled to the linear track, the transport member movable along the linear track;

a transducer support arm pivotably coupled to the transport member; and

a transducer assembly coupled to the transducer support arm.

18. A method in accordance with Claim 17 wherein the transport member comprises a plurality of guide rollers and a spur gear, the linear track comprises a rack, the spur gear configured to operationally couple to the rack to move the transport member along the linear track, said inspecting the metal article comprising repositioning the transducer assembly by moving the transport member along the linear track.

19. A method in accordance with Claim 17 wherein the transducer assembly comprises:

an attachment member coupled at a first end to the transducer support arm;

a support wheel coupled to a second end of the attachment member;

a link arm coupled to the second end of the attachment member;

at least one transducer holder coupled to the link arm; and

at least one of an ultrasonic transducer and an eddy current transducer mounted in each transducer holder.

20. A method in accordance with Claim 19 wherein the transducer assembly comprises at least two transducer holders, the transducer holders arranged linearly end to end and pivotably attached to each other.

21. A method in accordance with Claim 19 wherein the ultrasonic inspection system further comprises a first position encoder and a second position encoder, the first position encoder configured to determine a first axis positioning and the second position encoder configured to determine a radial or second axis positioning, said inspecting the metal article further comprising:

moving the metal article in relation to the transducer assembly; and

determining the position of the metal article in relation to each transducer with the first and second position encoders.

22. A method in accordance with Claim 17 wherein the metal article is a forging.

23. A method in accordance with Claim 22 wherein the forging is a component of a gas turbine, a steam turbine, or a generator.